

1 Amendments to the Claims:

2       This listing of claims will replace all prior versions, and  
3 listings, of claims in the application using (Original) (Currently  
4 Amended) (New) (Canceled) (Previously Presented) nomenclature, as  
5 recited in the below listing of claims.

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7 1. (Currently Amended) A method of producing organic polymer  
8 nanofibers having a reaction to chemical vapors, the method  
9 comprising the steps of,

10       forming a catalysis aqueous solution comprising an acid and an  
11 oxidizer,

12       forming a monomer organic solution comprising a monomer and an  
13 organic solvent, and

14       disposing the catalysis aqueous solution upon the monomer  
15 organic solution for forming an aqueous and organic interfacial  
16 interface between the catalysis aqueous solution upon the monomer  
17 organic solution for generating the organic polymer nanofibers.

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1 2. (Currently Amended) The method of claim 1 wherein,  
2 the monomer is selected from the group consisting of aniline,  
3 pyrrole, thiophene, toluidine, anisidine and other derivatives of  
4 aniline such as methylaniline, ethylaniline, 2-alkoxyaniline, and  
5 2,5 dialkoxyaniline for respectively producing polyaniline  
6 nanofibers, polypyrrole nanofibers, polythiophene nanofibers,  
7 polytoluidine nanofibers, polyanisidine nanofibers,  
8 polymethylaniline nanofibers, polyethylaniline nanofibers, poly(2-  
9 alkoxyanilines) nanofibers and poly(2,5-dialkoxyanilines)  
10 nanofibers respectively.

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12 3. (Original) The method of claim 1 wherein,  
13 the acid is selected from the group consisting of hydrochloric  
14 acid, sulfuric acid, nitric acid, perchloric acid, phosphoric acid,  
15 acetic acid, formic acid, tartaric acid, methanesulfonic acid,  
16 ethylsulfonic acid, 4-toluenesulfonic acid and camphorsulfonic  
17 acid.

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19 4. (Original) The method of claim 1 wherein,  
20 the oxidizer is selected from the group consisting of ammonium  
21 peroxydisulfate, iron chloride and other peroxydisulfate derivates  
22 such as sodium peroxydisulfate and potassium peroxydisulfate.

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24 5. (Original) The method of claim 1 wherein,  
25 the organic solvent is selected from the group consisting of  
26 carbon tetrachloride, benzene, toluene, chloroform, methylene  
27 chloride, xylene, hexane, diethylether, dichloromethane and carbon  
28 disulfide.

1 6. (Original) The method of claim 1 wherein,

2 the chemical vapor is selected from the group consisting of acid  
3 vapors, basic vapors, and alcohols.

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5 7. (Original) The method of claim 1 wherein,

6 the chemical vapor is selected from the group consisting of  
7 acidic vapors, basic vapors, alcohols, volatile organic chemicals,  
8 oxidizing agents and reducing agents.

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10 8. (Original) The method of claim 1 wherein,

11 the reaction is selected from the group consisting of a  
12 conductivity reaction, an optical reaction, a conformation  
13 reaction, a density reaction, an oxidation reaction and a reduction  
14 reaction.

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16 9. (Currently Amended) The method of claim 1 wherein the catalysis  
17 aqueous solution becomes a polymer aqueous solution comprising the  
18 polymer nanofiber, and the monomer organic solution becomes an  
19 depleted organic solution depleted of the monomer, the method  
20 further comprising the steps of,

21 separating the polymer aqueous solution from the organic  
22 depleted solution,

23 purifying the polymer aqueous solution for extracting the  
24 polymer nanofibers from the polymer solution.

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1 10. (Original) The method of claim 1 further comprising the steps  
2 of,

3 forming a thiol surface layer on gold terminals,  
4 forming a precoating of the polymer nanofibers upon the gold  
5 terminals.

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7 11. (Original) The method of claim 1 further comprising the step  
8 of,

9 selecting the acid for providing a predetermined sized  
10 diameter of the polymer nanofibers.

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12 12. (Original) The method of claim 1 wherein,

13 the polymer nanofibers have diameters less than 500 nm and  
14 lengths less than 10  $\mu\text{m}$ .

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17 13. (Original) The method of claim 1 wherein,

18 the polymer nanofibers are polyaniline nanofibers having  
19 diameters less than 500 nm and lengths less than 10  $\mu\text{m}$ .

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1 14. (Currently Amended) A method of producing an organic conducting  
2 polymer nanofibers having a reaction to chemical vapors, the method  
3 comprising the steps of,

4       forming a catalysis aqueous solution comprising an acid and an  
5 oxidizer,

6       forming a monomer organic solution comprising a monomer and an  
7 organic solvent, and

8       disposing the catalysis aqueous solution upon the monomer  
9 organic solution for forming an aqueous and organic interfacial  
10 interface between the catalysis aqueous solution upon the monomer  
11 organic solution for generating the conductive organic polymer  
12 nanofibers.

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15. (Original) The method of claim 14 wherein,  
the monomer is selected from the group consisting of aniline,  
pyrrole, and thiophene for respectively producing polyaniline  
nanofibers, polypyrrole nanofibers, and polythiophene nanofibers,  
respectively,  
the acid is selected from the group consisting of hydrochloric  
acid, sulfuric acid, nitric acid, perchloric acid, and  
camphorsulfonic acid,  
the oxidizer is selected from the group consisting of ammonium  
peroxydisulfate, iron chloride, sodium peroxydisulfate and  
potassium peroxydisulfate,  
organic solvent is selected from the group consisting of  
carbon tetrachloride, benzene, toluene, chloroform, methylene  
chloride, xylene, hexane, diethylether, dichloromethane and carbon  
disulfide,  
the chemical vapor is selected from the group consisting of  
acidic vapors, basic vapors, water, alcohols, organic vapors and  
reducing agents,  
the reaction is change in conductivity reaction.

16. (Original) The method of claim 15 wherein,  
the acid is camphorsulfonic acid, and  
the diameters of the nanofibers are 50 nm.

17. (Original) The method of claim 15 wherein,  
the acid is hydrochloric acid, and  
the diameters of the nanofibers are 30 nm.

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1 18. (Original) The method of claim 15 wherein,  
2 the acid is perchloric acid, and  
3 the diameters of the nanofibers are 120 nm.  
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5 19. (New) A method of producing organic polymer nanofibers having a  
6 reaction to chemical vapors, the method comprising the steps of,  
7 forming a catalysis aqueous solution comprising an acid and an  
8 oxidizer,

9 forming a monomer organic solution comprising a monomer and an  
10 organic solvent, and

11 disposing the catalysis aqueous solution upon the monomer  
12 organic solution for forming an aqueous and organic interfacial  
13 interface between the catalysis aqueous solution upon the monomer  
14 organic solution for generating the organic polymer nanofibers,  
15 wherein,

16 the monomer is selected from the group consisting of aniline,  
17 pyrrole, thiophene, toluidine, anisidine and other derivatives of  
18 aniline such as methylaniline, ethylaniline, 2-alkoxyaniline, and  
19 2,5 dialkoxyaniline for respectively producing polyaniline  
20 nanofibers, polypyrrole nanofibers, polythiophene nanofibers,  
21 polytoluidine nanofibers, polyanisidine nanofibers,  
22 polymethylaniline nanofibers, polyethylaniline nanofibers, poly(2-  
23 alkoxyaniline) nanofibers and poly(2,5-dialkoxyaniline) nanofibers  
24 respectively, wherein,

25 the acid is selected from the group consisting of hydrochloric  
26 acid, sulfuric acid, nitric acid, perchloric acid, phosphoric acid,  
27 acetic acid, formic acid, tartaric acid, methanesulfonic acid,

1 ethylsulfonic acid, 4-toluenesulfonic acid and camphorsulfonic  
2 acid,

3 the oxidizer is selected from the group consisting of ammonium  
4 peroxydisulfate, iron chloride and other peroxydisulfate derivatives  
5 such as sodium peroxydisulfate and potassium peroxydisulfate, and

6 the organic solvent is selected from the group consisting of  
7 carbon tetrachloride, benzene, toluene, chloroform, methylene  
8 chloride, xylene, hexane, diethylether, dichloromethane and carbon  
9 disulfide.

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11 20. (New) The method of claim 19 wherein,

12 the polymer nanofibers have diameters less than 500 nm and  
13 lengths less than 10  $\mu\text{m}$ .

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